

embodiment of the invention, the user may give verbal input rather than pressing keys with the input being recognised by speech recognition.

[0050] Of course, the angle does not have to be exactly 115° but may be arbitrarily chosen. The angle may be either freely adjustable or it may be adjustable in certain steps. There may only be two possible angles at which the mobile station may be fixed: in a completely closed configuration, where the angle is 0°, and in an open configuration, where the angle is typically within a range of 90 to 270 degrees, preferably less than 180 degrees. Alternatively, there may be a third fixed angle so that there are different angles for telephone use and for data terminal use, as described later in this document.

[0051] FIG. 4 shows a perspective of the mobile station of FIG. 1 in an extended, data terminal, configuration. Pairs of elements forming each of the first and second hinged entities, that is elements 10 and 12 and elements 11 and 13 are connected to each other by a flexible keyboard 14 and a flexible display 15 respectively. The upper storage element 11 provides a storage space into which the keyboard 14 can be wound and the lower storage element 10 provides a storing space into which the display 15 can be wound. Both the keyboard 14 and the display 15 are arranged to be wound into their respective storage spaces so that the mobile station is in a suitable configuration for transportation or to be used as a telephone. This can be arranged by using any suitable means such as a spring-loaded or an electrically driven roller. In case of electrically driven winding, the battery can be connected to a miniature sized electrical motor in the lower storage element 10 with flexible wires extending beneath the keyboard 14. The elements 13 and 12 are provided with grips, which a user can grasp to pull the elements in respective pairs 10 and 12 and 11 and 13 away from each other. When these pairs are being separated, the keyboard 14 and the display 15 become removed from their storage spaces and unwound partially or to their full extents. The keyboard 14 and the display 15 are electrically coupled to the electronics within the electronics housing element 13. The device also comprises a flexible flat cable (not shown) extending across the hinges 18 to couple the battery, the keypad and the keyboard 14 to the electronics in the electronics housing element 13. Thus the electronics drives the display 15 and receives input from the keyboard 14.

[0052] Since the keyboard 14 and the display 15 are flexible and can be wound, they do not need to be sharply folded. Alternatively, the keyboard 14 and the display 15 may be stored in their respective storage spaces in a concertina type arrangement having a suitable mechanism to retract them.

[0053] In the extracted configuration, the keyboard 14 and the display 15 are parallel in the direction of their longest side, although they do not necessarily share the same plane.

[0054] In one embodiment of the invention the keyboard 14 is a touch pad arrangement for sensing touch by a finger or by a touch pen 17 which is provided for this purpose. In this embodiment, the pen 17 is located in an end of the lower storage element 10. It is convenient to locate the pen 17 on, or adjacent to, an axis about which the keyboard 14 is wound. In this way, the pen 17 may be located inside the keyboard 14 when it is wound. The keyboard 14 is made of an EMFi film, as is known to a person skilled in the art. A

set of keys 16 is printed on the keyboard 14 to indicate to a user where to press. In another embodiment, the keys of the keyboard are not printed but instead the keyboard is capable of displaying virtual keys 16, that is soft keys, which are to be pressed. Using soft keys allows dynamic mapping and thus enhances the variability of the keyboard so that it can be adapted to receive input of different kinds in different circumstances. For example, the mobile station can show legends for shortcut keys (such as CTRL A) adjacent to certain keys. These legends may be customised by different applications. In another embodiment, rather than providing a keyboard, a touch pad is provided which can be used as a drawing surface for a drawing application or used as a general input device. For example, it could be used to extend the display area to provide an expanded view to a document or an image.

[0055] The display 15 is a paper-like display element. Manufacturers for such display elements comprise E-Ink Inc. & Massachusetts Institute of Technology and Rank Xerox Corporation. Rank Xerox has described one type of paper-like displays called "gyricon": "A gyricon sheet is a thin layer of transparent plastic in which millions of small beads, somewhat like toner particles, are randomly dispersed. The beads, each contained in an oil-filled cavity, are free to rotate within those cavities. The beads are 'bichromal', with hemispheres of contrasting color (e.g. black and white), and charged so they exhibit an electrical dipole. Under the influence of a voltage applied to the surface of the sheet, the beads rotate to present one colored side or the other to the viewer. A pattern of voltages can be applied to the surface in a bit-wise fashion to create images such as text and pictures. The image will persist until new voltage patterns are applied to create new images. ' . . . ' For applications requiring more rapid and direct electronic update, the gyricon material might be packaged with a simple electrode structure on the surface and used more like a traditional display. Gyricon is described at <http://www-parc.xerox.com/dhl/projects/epaper/>.

[0056] The first hinged entity is relatively massive compared to the second hinged entity so that the first entity can lie flat upon a surface when the mobile station is opened. This applies even when the second hinged entity is disposed at an angle to the first hinged entity of more than 90°. In this way, the mobile station is self-supporting when in a data terminal mode. Therefore, the mobile station can be placed on a desk and not topple over. This stability can be provided by locating heavy parts of the mobile station, such as the battery, in the battery housing element 12. Alternatively, it can be provided by locating the majority of the weight in the battery housing element 12 away from the hinges 18 and the majority of the weight in the electronics housing element 13 close to the hinges 18.

[0057] The mobile station may also comprise a frame located beneath the keyboard 14 and the display 15. The frame holds the mobile station in the extended configuration. The frame is extendable and retractable. The frame also provides support to the back faces of the keyboard 14 and the display 15 to enable the mobile station to be used on an uneven surface or in the hands of a user. In any case, whether or not a frame is provided, winding of the keyboard 14 and the display 15 can be arranged to occur only in response to